Operating Instructions

Compact Stereo

SG-4010

National Panasonic

Before operating this set, please read these instructions completely

Contents

Special Features 1
Power Supply 2
Safety Tips 3
Front Panel Information 4
Rear Panel Information 5
Radio Operation 7
Phono Operation 7
Automatic Operation 7
Manual Operation 8
Stylus Replacement 9
Adjustments 9
Cassette Tape Operation 10
Playback 12
Recording 12
Erase and Erase-Protection 13
Head Cleaning 14
8-Track Tape Operation 15
General Introduction 15
Playback 17
Recording 17
Erasing 19
Head Cleaning 19
4-Channel Matrix Listening 20
Location of Serial Number 20
Supplied Accessories 20
Specifications 21
Some Helpful Hints Chart 22

Power Supply

Before playing your Music Center, ascertain the AC voltage selector ㊼. Make sure that it is adjusted for the voltage in your area. **The voltage to which it has been set at factory can be seen on the rear of the unit.**

If necessary, reset the AC voltage selector ㊼ with a screwdriver.

If a slight hum is audible when records, cassettes or 8-Track tapes are being played, reverse the position of the power plug.

NEVER OPERATE THE MUSIC CENTER WITHOUT BOTH "FRONT" SPEAKER SYSTEMS CONNECTED.

NOTE: If it becomes necessary for you to take this unit to an area having a different frequency of current, be sure to change the capstan of phonomotor to obtain sufficient performance from your built-in record changer. Either 50Hz or 60Hz capstan is enclosed with this unit as an accessory component. Needless to say, when a 60Hz capstan is enclosed, this unit is pre-adjusted for 50Hz and vice versa. Please consult your nearest National Panasonic dealer for further details. Please note that this instruction is not applicable for the cassette and 8-Track DC motors.

Safety Tips

CAUTION: **Please read and strictly observe the following precautionary measures for your safety.**

Electrical energy can perform many useful functions. This unit has been engineered and manufactured to assure your personal safety. But **improper use can result in potential electrical shock or fire hazards.** In order not to defeat the safeguards incorporated in this unit, observe the following basic rules.

1 This unit is provided with ventilation openings in the cabinet to allow heat generated during operation to be released. Never block the ventilation grille and never place the set near or over radiator or heat register.

2 Overloaded AC outlets and extension cords are dangerous, and so are frayed power cords and broken plugs. Call your service technician for replacement of dangerous power cords.

3 This unit should not be directly exposed to sunlight, and should be kept free from dust, moisture and vibration.

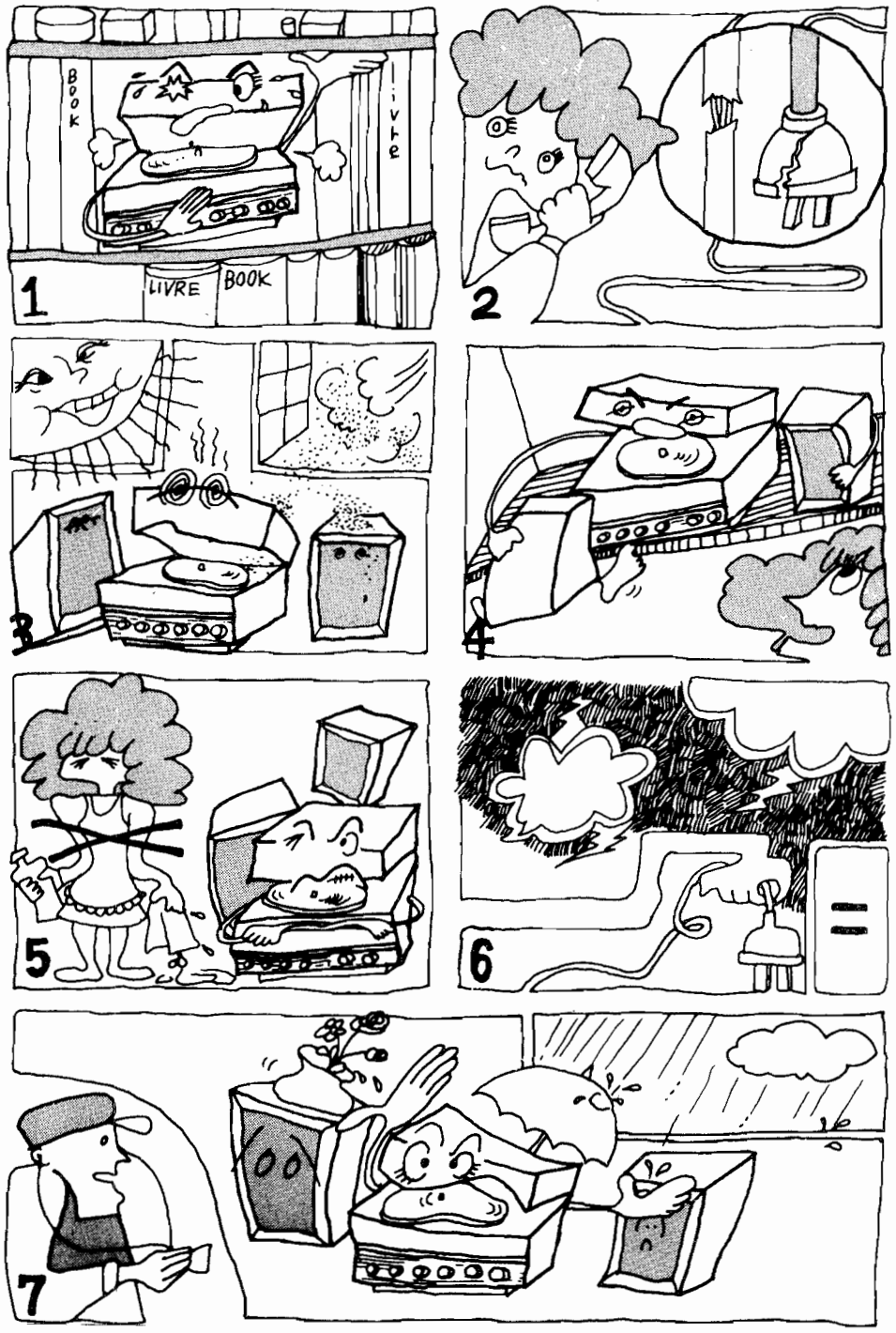
4 To avoid personal injury, do not place the unit on a sloping shelf unless properly secured.

5 Turn off the unit before cleaning the cabinet. Use a slightly damp (not wet) cloth. Never use solvents such as alcohol, benzine, or thinner as they may mar the finish of the cabinet.

6 For added protection of the unit during a lightning storm or when the set is to be left unattended for an extended period of time, unplug it from the wall outlet. This will prevent possible shock and fire hazard due to lightning storms or power line surges.

7 Never expose the set to rain or water. Never operate the unit if liquid has been spilled into it. If the unit becomes damp or wet, pull the plug and have the set inspected by a service technician before further use. Rain or excessive moisture — even as a result of extended exposure on a back porch — as well as spilled liquid inside can cause electrical shorts which can result in fire or shock hazards.

Do not attempt to repair the set by yourself, but contact your nearest National Panasonic Servicenter for necessary repairs.



MAIN CONTROLS

❶ **Power ON-OFF switch (POWER)**

❷ **Headphones jacks (HEADPHONES)**
For private listening from all program sources, plug a stereo headphone (optional), 8 ohms or more, into the Headphones jack. The speakers will be automatically disconnected.
NOTE: Be sure to turn down the volume control before connecting the headphones. A high level of audio power can overload and severely damage the headphones, not to mention your eardrum.

❸ **Mode selector switch**
Refer to the "4-Channel Matrix Listening" section on Page 20

❹ **Loudness switch (LOUDNESS)**
Use this switch to boost bass and treble response at low volume listening levels. Due to the characteristics of the human ear, both bass and treble seem greatly reduced at low listening levels. This switch compensates for this apparent loss.
OFF (▮): When listening to your music center at normal or high volume setting.
ON (▬): When listening at low volume.

❺ **Volume control (VOLUME)**

❻ **Balance control (BALANCE)**

❼ **Bass control (BASS)**

❽ **Treble control (TREBLE)**

❾ **Selector switch (SELECTOR)**
(8-TRACK·MIC/CASSETTE·MIC/PHONO/FM STEREO/FM/AM)

❿ **AFC switch (AFC)**
For "FM" or "FM STEREO" reception, keep this switch in "OFF" (▮) position while tuning. After the station is tuned in properly, push this switch in "ON" (▬) position for drift-free listening. The AFC switch may be left in either position during AM operation.

⓫ **Tuning control (TUNING)**

⓬ **FM STEREO indicator**

⓭ **Tuning meter (SIGNAL STRENGTH)**

⓮ **Dial pointer**

CASSETTE TAPE RECORDER CONTROLS

⓯ **Recording level meter for cassette**

⓰ **Recording indicator lamp (REC)**

⓱ **Tape selector switch**

⓲ **Eject button (EJECT)**

⓳ **Pause button (PAUSE)**

⓴ **Stop button (STOP)**

㉑ **Play button (PLAY)**

㉒ **Fast forward button (FF)**

㉓ **Rewind button (REWIND)**

㉔ **Record button (RECORD)**

㉕ **Cassette holder**

㉖ **Tape counter w/Reset button**

8-TRACK TAPE RECORDER CONTROLS

㉗ **Program selector (PROGRAM)**

㉘ **Repeat button (REPEAT)**

㉙ **Program indicator lamps (PROGRAM INDICATOR)**

㉚ **Pause button (PAUSE)**

㉛ **End of Track Eject button (AUTO EJECT)**

㉜ **FF Warning lamp (RELEASE FF)**

㉝ **Fast forward button (FF)**

㉞ **Manual Eject button (EJECT)**

㉟ **Time counter with Reset button**

㊱ **Microphone jacks (LEFT and RIGHT)**

㊲ **Tape slot**

㊳ **Record button (RECORD)**

㊴ **Recording level meter for 8-Track**

㊵ **Recording indicator lamp (REC)**

Rear Panel Information

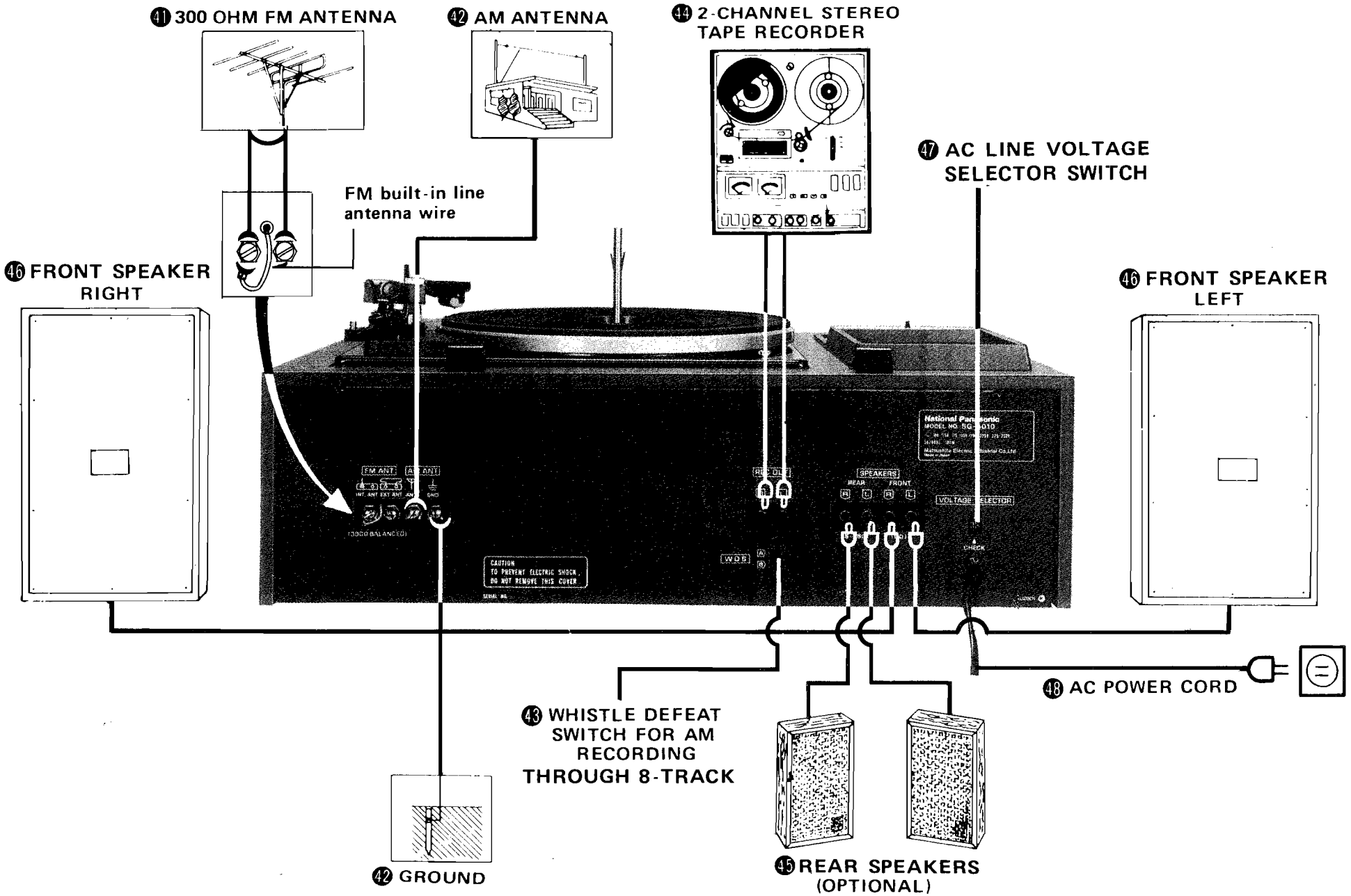

41 300 OHM FM ANTENNA
42 AM ANTENNA
44 2-CHANNEL STEREO TAPE RECORDER
FM built-in line antenna wire
47 AC LINE VOLTAGE SELECTOR SWITCH
46 FRONT SPEAKER RIGHT
46 FRONT SPEAKER LEFT
43 WHISTLE DEFEAT SWITCH FOR AM RECORDING THROUGH 8-TRACK
48 AC POWER CORD
42 GROUND
45 REAR SPEAKERS (OPTIONAL)

Fig. 4

㊶ FM External Antenna (FM ANT)

Built-in line antenna (INT ANT): This set has been connected to the built-in FM line antenna at the factory. Stretch out the power cord completely and change the direction of the power cord until optimum FM or FM Stereo reception is obtained.
External FM antenna (EXT ANT): Convenient FM antenna terminals are provided at the rear panel. For FM or FM Stereo reception in fringe areas, or where the built-in line antenna does not provide satisfactory reception, connect an FM dipole antenna to the FM antenna terminals.
For best results disconnect the built-in line antenna wire from the FM antenna terminal before connecting an external FM antenna.
Your National Panasonic dealer is most familiar with the type of reception in your particular area and, if necessary, should be consulted for further information.

㊷ AM External Antenna (AM ANT) and Ground (GND)

The built-in extra-sensitive ferrite core antenna assures excellent reception in most areas. However, should you wish to receive a very distant broadcast, connect an external AM antenna to this unit's AM external antenna terminal (ANT) ⏉. To reduce noise, connect a wire between the ground terminal ⏚ (GND) and ground.

㊸ WHISTLE DEFEAT SWITCH FOR AM RECORDING THROUGH 8-TRACK (WDS)

When recording from AM radio through the built-in 8-Track tape recorder, some "whistle sound" noise may be heard from the speakers when the Record button ㊳ is pushed. When this occurs, simply shift this switch either "A" or "B" until the "whistle sound" noise disappear. Then satisfactory AM radio recording will be achieved.

NOTE: However, if "whistle sound" or "interference" noise comes from other external electrical devices, (i.e. T.V., fluorescent lamps, refrigerators, etc.), this switch will not be effective.

㊹ Recording Output jacks (REC OUT)

In addition to being able to record on the built-in 8-track tape recorder any program to which you are listening, you also may use an external tape recorder. To record any desired program from this unit onto an external tape recorder, connect appropriate cables from these jacks to the left and right channel high level input jacks of your external tape recorder.

㊺ REAR SPEAKER TERMINALS

㊻ FRONT SPEAKER TERMINALS

㊼ AC LINE VOLTAGE SELECTOR SWITCH

㊽ AC POWER CORD

Radio Operation

Adjust the following controls:

1) Selector switch ❾ → desired radio band, either FM or AM.
2) Power ON-OFF switch ❶ → depress to "ON" (▬), which also lights up the dial panel.
3) Tuning control ⓫ → desired radio station. The Dial pointer ⓮ indicates your station. While tuning your radio station watch the needle of the Tuning meter ⓭ that it deflects onto the farthest right (biggest number) to obtain the highest radio tuning frequency.
   NOTE: Keep the AFC push-button switch in "OFF" (▮) until optimum tuning is achieved. (Refer to section Front Panel Information, AFC push-button switch.)
4) Volume control ❺ → desired volume level.
5) Balance control ❻ → so that sound seems to come from the center (between the 2 speakers) by adjusting the sound balance from your left and right speaker systems.
6) Bass ❼ and Treble ❽ → to obtain the desired tonal quality.
7) Loudness switch ❹ → as described in the "Front Panel Information".
8) After listening, switch the Power switch to "OFF" (▮).

FM STEREO RECEPTION

The FM STEREO indicator ⓬ will automatically light up when the program is being broadcast in FM Stereo. This FM STEREO indicator will function when the Selector switch ❾ is in either "FM STEREO" or "FM" position. But please remember, you are listening to FM Stereo only when the FM STEREO indicator is lit and the Selector switch ❾ is set to "FM STEREO". If the Selector switch is set to "FM" you are only listening monaurally although the FM STEREO indicator lights up.

Phono Operation

National Panasonic Fully Automatic Record Changer is primarily fabricated for use with EIA (Electronic Industries Association) standard records to ensure perfect and satisfactory performance. EIA standard records are recommended for use with this unit. Non-standard records can also be utilized with this unit. However, occasional difficulties of proper dropping of records during automatic play may be encountered due to the unusual thickness of some records.

Before using . . . . .

1) Make sure that the two transit screws are fully screwed down to the mainplate.
2) Remove the four lock screws on the turntable by turning counterclockwise so that the turntable unit floats freely on the mounting springs.
3) Place the turntable mat (enclosed with this unit) over the turntable.

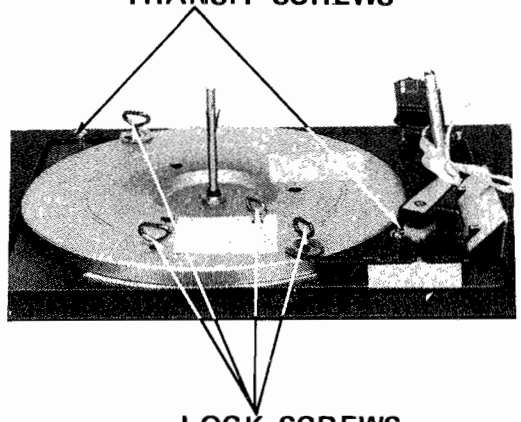


Fig. 5

4) Release the clamp that holds the pick-up arm.
5) Rotate the turntable clockwise by hand, five times, to ensure that the mechanism is in neutral position.

AUTOMATIC OPERATION

1 Insert the automatic spindle by placing the key on its base into the slot of the turntable shaft. Then push the automatic spindle firmly downward and turn clockwise until it stops. (Fig. 6)

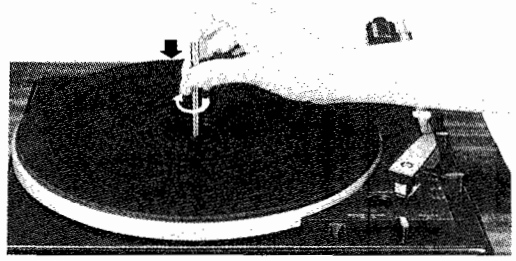


Fig. 6

2 Switch the power switch ❶ to "ON".

3 Set the function selector ❾ to "PHONO" position.

4 Set the size select lever (Fig. 7) and speed select lever (Fig. 8) to the type of records to be played.

5 Place a stack of records (maximum of 6), which must be of same speed and groove type (i.e. standard or long playing) on the "umbrella-type" fingers of the automatic spindle. (Fig. 9)

* The time-saving "umbrella-type" changer mechanism guarantees quick loading and easy removal of records.

6 To start the turntable, move the start lever to "START" position and hold there momentarily and release when turntable starts revolving. The start lever will return to "⏏" position. The first record will automatically drop and play. (Fig. 10)

7 Adjust the Volume ❺, Balance ❻, Bass ❼ and Treble ❽ controls as you would for radio operation.

8 After playing the last record, the pick-up arm will return to the arm rest and the turntable will shut off automatically.

To Reject (Fig. 11)

To reject a record at any time when the unit is in operation, move the start lever to the "START" position. The next record will automatically drop and play.

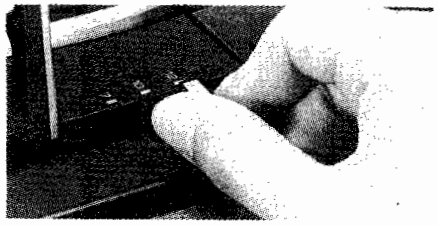


Fig. 7

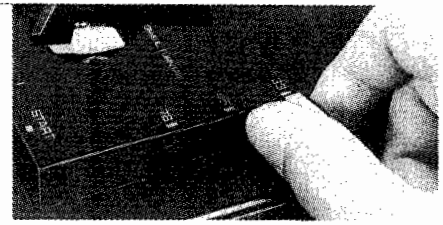


Fig. 8

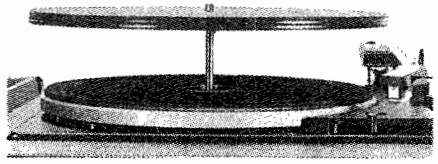


Fig. 9

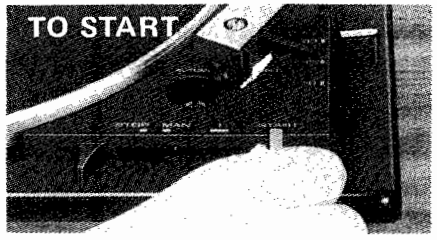


Fig. 10

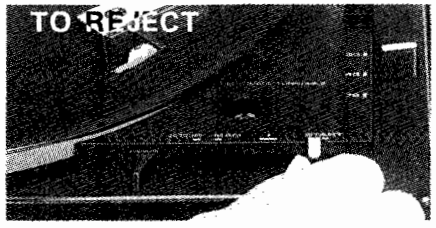


Fig. 11

To Stop (Fig. 12)

After playing the last record, the turntable will shut off automatically. However, if it becomes necessary to stop the unit during play, move the start lever to the "STOP" position. If the record changer is stopped during the "change cycle", it must be allowed to complete that cycle before attempting to remove the records.

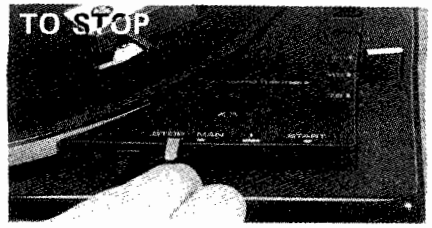


Fig. 12

Attaching 45 rpm Automatic Spindle (Fig. 13) (Optional, Part No. SH-45A1)

When playing 45 rpm records automatically, first remove the spindle you have been using, then insert the 45 rpm automatic spindle (optional) by placing the key on its base into the slot of the turntable shaft. Then push it firmly downward and turn clockwise until it stops.

Fig. 13

MANUAL OPERATION

1 Remove the automatic spindle by turning it counterclockwise and lifting it from the turntable shaft. Then replace it with the **manual spindle. (Figs. 13 & 14)**

2 Switch the power switch ❶ to "ON".

3 Set the function selector ❾ to "PHONO" position.

4 Set the size select lever and speed select lever to the type of record to be played singly. (Figs. 7 & 8)

Fig. 14

5 Place the record on the turntable.
6 Start the turntable in one of three ways:
1. Automatic Start
Move the start lever to "START" position and hold there momentarily and release when turntable starts revolving.
2. Manual Start
Set the start lever to "MAN" position and place the pick-up arm on the record.
3. Cue-Control Start
a. Raise the cueing lever to lift the pick-up arm.
b. Move the **pick-up** arm to the selected point.
c. Set the start lever to "MAN" position.
d. Lower pick-up arm to the groove by returning the cueing lever to the rest position.

7 Adjust the Volume ❺, Balance ❻ Bass ❼ and Treble ❽ controls as you would for radio operation.
8 At the finish of the record, the pick-up arm will return to the rest position and the turntable will shut off automatically.
* To stop during play, move start lever to "STOP" position. The pick-up arm will return to the rest position and the turntable will shut off automatically.

Attaching 45 rpm Manual Adaptor

When playing manually 7", 45 rpm records with a large center hole, simply place the 45 rpm manual adaptor into the turntable shaft. (Fig. 15)

Fig. 15

TO USE CUEING LEVER

1) To interrupt the record, raise the cueing lever to the "▼" position to lift the pick-up arm. (Fig. 16)
2) To resume playing a record, lower the cueing lever to the "▼" position. The pick-up arm will descend slowly and resume playing in the same groove.

Note: **Limit of the cueing control height;** The cueing lever should not be used with more than three records on the turntable.

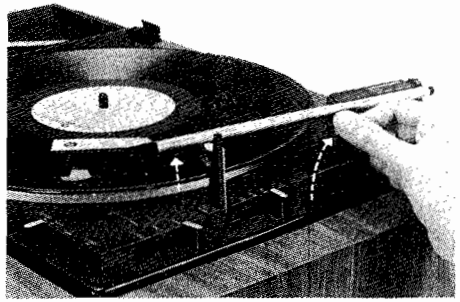


Fig. 16

STYLUS REPLACEMENT

Replace the stylus at the first sign of wear to assure pleasant sound at all times and to prevent damage to records. This is easily done by following these instructions:
1) Lift pick-up arm to a position that will make the stylus accessible.
2) Gently remove worn stylus by pulling downward.
3) Replace new stylus into the slot of the cartridge correctly.

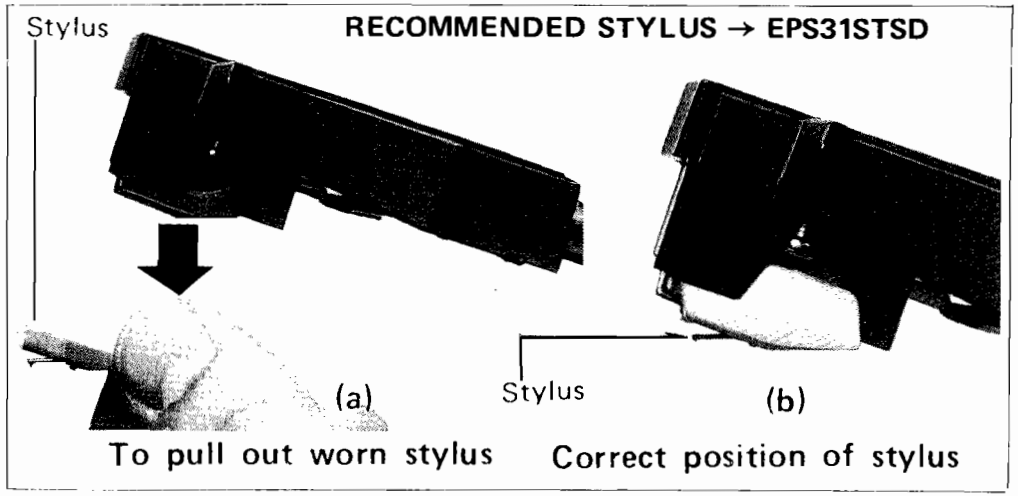


Fig. 17

ADJUSTMENTS

This unit has been subjected to the most rigorous inspections and tests before leaving the factory, where all necessary adjustments have been made to ensure the satisfactory playing of records. The following information is provided, should it become necessary to make any minor adjustments.

1. Stylus Pressure

The stylus pressure should always be set as recommended by the cartridge manufacturer. The pressure is adjusted by means of the stylus pressure adjusting screw (Fig. 18 ①). Turning the screw clockwise as viewed from the front (toward "+") increases the pressure, counterclockwise (toward "−") reduces the pressure. (Recommended stylus pressure for original equipment cartridge in this set is approx. 4.5 grams.)

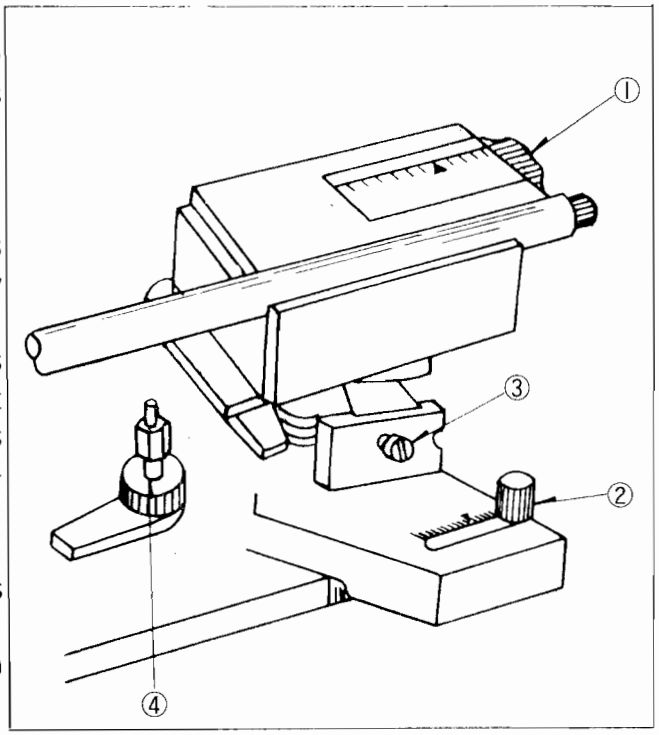


Fig. 18

2. Anti-Skating Control

Having set the required stylus pressure, the anti-skating force is adjusted to correspond to the stylus pressure applied. Moving knob (Fig. 18 ②) toward "+" increases the anti-skating force, toward "−" reduces the force.

3. Stylus Set-Down

The stylus set-down position can be adjusted by turning the stylus set-down adjusting screw (Fig. 18 ③) clockwise or counterclockwise.

4. Pick-Up Arm Lifting Height

If pick-up arm does not clear the top record of a stack on the turntable when returning to its rest position, turn the pick-up lifting height adjusting screw (Fig. 18 ④) counterclockwise to raise the pick-up arm. The stylus should lift 15.0 mm above the face of a single record on the turntable as pick-up arm returns to its rest position. By turning the screw clockwise, the pick-up arm is lowered.

SELECTION OF CASSETTE TAPE

A wide selection of cassette tapes is available today. To make tapes longer than 60 minutes (C-60), it is necessary for the tape manufacturer to use thinner tape, which is fragile and must be handled with extreme care. Because the likelihood of a cassette failure increases greatly as the tape playing time is increased, we recommend not using tapes longer than necessary. Sixty-minute tapes C-60 will provide optimum performance with this unit.

NOTE: Should the tape develop a slack (Fig. 19, arrow 1), tighten the tape tension by lightly turning the hub of the cassette (Fig. 19, arrow 2) with an ordinary pencil before inserting the cassette into the cassette holder.

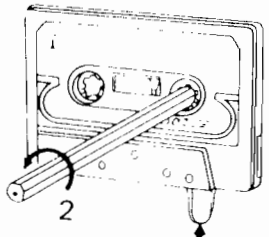


Fig. 19

SOME IMPORTANT HINTS FOR PROPER OPERATION OF THE TAPE RECORDER BUTTONS

Always depress the **STOP** button before changing the mode of operation. (For example; Play → **Stop** → FF → **Stop** → Rewind → **Stop** → Record → **Stop** → etc.) By depressing the **STOP** button, the previously depressed operating button will return to its original position.

Do not depress buttons or lift them up by force.

If the **RECORD** button cannot be depressed easily, do **NOT FORCE** it, but check the erase protection device on your **TAPE**. (See the **ERASE AND ERASE-PROTECTION SECTION** for details on page 13.)

Inserting the Cassette

1) Depress the cassette Eject button ⓲ to open the Cassette holder ㉕. (Fig. 20)
2) Insert the cassette firmly with the openings (tape exposed side) facing you.
   Be careful not to touch the exposed tape.
3) Close the cassette holder manually.

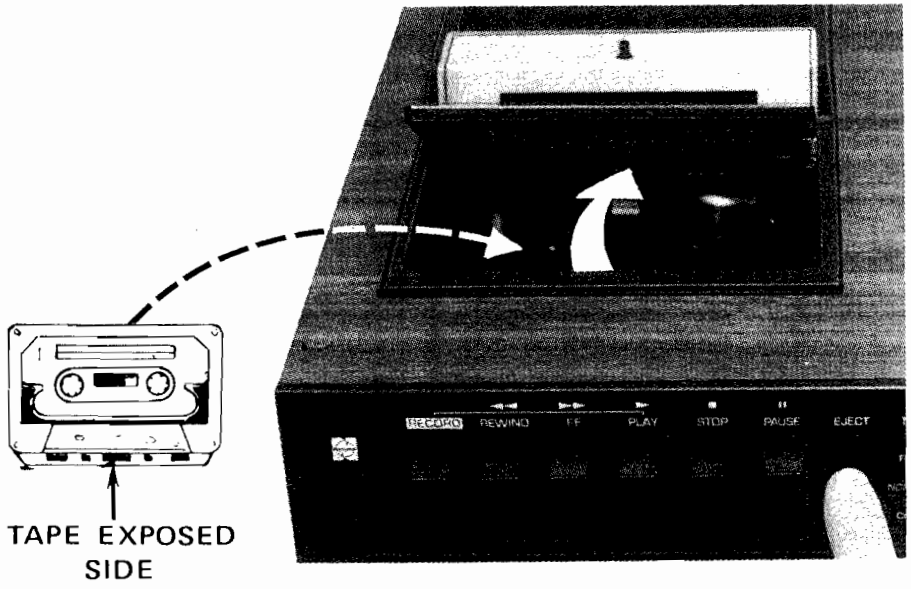


Fig. 20

Removing the Cassette

1) Depress the Stop button ⓴.
2) Press the cassette Eject button ⓲ to open the Cassette holder and remove the cassette.

AUTO STOP CASSETTE SYSTEM

When the tape reaches its end, during playback or recording, it automatically stops and the record and play buttons return to their original positions.
Note, however, that this feature does not function during rewind or fast forward and that the Stop button must be pushed.

- When the tape comes to an end, it automatically stops. At this time, because the mechanical stop device operates, the Play button will not lock (stay depressed) when pushed.
- To continue operation (recording or playback), you must rewind the tape or press the **Eject** button and turn the cassette over.

Rewind and Fast Forward

To rewind the tape to the left reel, push the Rewind button ㉓.
To advance the tape rapidly to the right, push the Fast Forward button ㉒. (Fig. 21)

CAUTION: **Always be sure to press the STOP button after every operation of the REWIND or FAST FORWARD button. When the REWIND or FAST FORWARD button is left depressed, it may cause damage to the motor or to the mechanical system of the cassette system.**

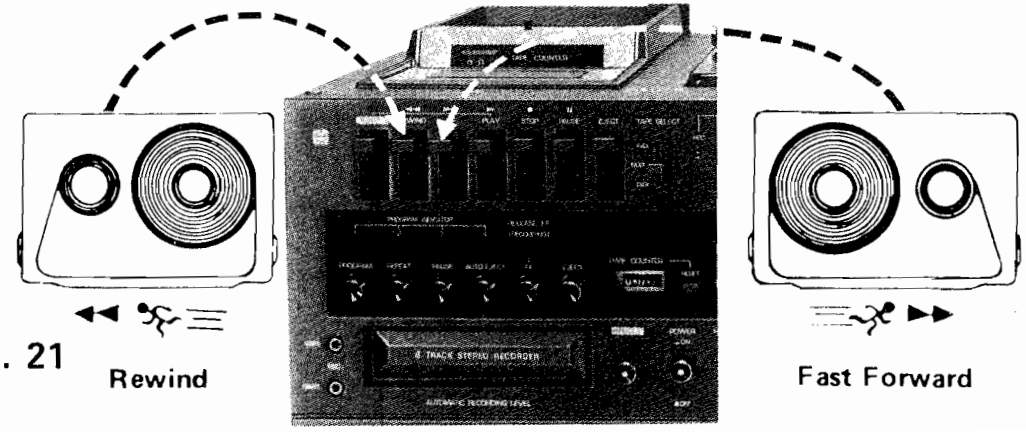


Fig. 21

Tape Counter and Reset Button

The Tape counter ㉖ will automatically start to count when playing back or when recording. This counter will help you determine approximately where to re-play or re-record. Therefore, it will be convenient for you to set the Tape counter to "000" by pushing the Reset button ㉖ before the start of any playback or recording.

Pause Button ⑲

To interrupt the tape movement temporarily during playback or recording, depress this button downward. To resume playing (or when you are ready to start recording), simply release this button by lightly pressing it once again.

NOTE: Do not leave the Pause button in "depressed" position for a long period of time.

PLAYBACK

1) Selector switch ⑨ → to "CASSETTE/MIC".
2) Power switch ❶ → to "ON" (▬).
3) Insert the pre-recorded cassette tape firmly into the Cassette holder ㉕. (Tape exposed side facing you)
4) Close the Cassette holder ㉕ manually.
5) Playback button ㉑ → depress.
6) Adjust the volume, balance, bass, treble and loudness controls as you would for radio operation.
7) Stop button ⑳ → push to stop playback.

RECORDING

This unit has provisions for monitoring (except in "microphone" mode) through its speakers, when making recordings. When recording, Volume ❺, Balance ❻, Bass ❼, Treble ❽ and Loudness ❹ control settings do not affect recording level and tonal quality.

Automatic Recording Level Control

This unit's recording level control system adjusts and maintains proper recording level automatically. Thus, manual recording level adjustment is not necessary. It saves you from adjusting knobs every time you record.

Recording Level Meter ⑮ and REC Lamp ⑯

REC lamp ⑯ lights up and the needle movement of Recording level meter ⑮ indicates when your unit is in "recording" mode. This unit's recording level control system adjusts and maintains proper recording level automatically.

Tape Selector ⑰

FeCr: For recording on Ferri-Chrome cassette tapes only.
NORMAL: For recording on standard cassette tapes only.
CrO_2: For recording on chromium dioxide cassette tapes only.

NOTE: This switch enables you to select the proper frequency characteristics for any of "FeCr", standard "NORMAL" or Chromium dioxide "CrO_2" cassette tapes. Set this selector to the correct position when recording according to type of "cassette tape". (This selector may be left in either position when playing back.)

Recording from built-in Radio, Phono or 8-Track Tape Player

* **Be sure no microphone is connected to the Microphone jack ㊱. Then proceed as follows:**

1) Insert the cassette tape to be recorded.
2) Operate as you would for radio, phono or 8-Track tape operation and choose the program you wish to record.
3) **Push and lock the Pause button ⑲.**
4) While pressing the Record button ㉔ push the Play button ㉑.
5) As soon as you are ready to start the recording, **release the Pause button ⑲.**
6) To stop recording, simply push the Stop button ⑳.

Recording from the Microphone(s)

1) Connect the microphone(s) to the Microphone jack(s) ㊱.
2) Turn the Selector switch ⑨ to "CASSETTE/MIC" position.
3) Follow items 3 to 6 of "Recording from built-in Radio, Phono or 8-Track Tape Player" above.

CAUTION: **When NOT recording from the microphone(s), disconnect the microphone(s) from the Microphone jack(s).**

ERASE AND ERASE-PROTECTION

Erasing

Any previously recorded material on a tape is automatically erased when the tape is again used for recording and only the newly recorded sound will remain. To erase the tape without adding a new recording, proceed as follows.

1) Disconnect (unplug) the microphone(s) from the Microphone jack(s) ㊱.
2) Selector switch ⑨ → "CASSETTE/MIC".
3) Let the tape run as if recording. All previous recordings will be erased.

NOTE: If microphone(s) are not unplugged, unwanted room and outside noises will be recorded during erasing.

Erase-Protection

Cassettes incorporate a convenient erase-protection device to prevent accidental erasure. When the small "tabs" at the rear of a cassette are broken out, the erase-protection device will be activated, preventing accidental erasure of pre-recorded tapes. To protect side 1 recording, break out the tab for side 1. For protection of side 2, break out the tab for side 2. (Fig. 22)

NOTE: If, for some reason, you want to record on a track for which the "tab" has already been removed, simply cover the slot with a small piece of cellophone or vinyl tape. (Fig. 23)

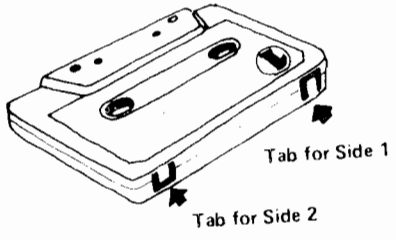


Fig. 22

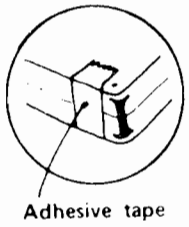


Fig. 23

HEAD CLEANING (Fig. 24)

The REC/PLAY and ERASE heads in the cassette deck may accumulate dust and tape residue, causing poor and wavering sound. This residue should be cleaned periodically (about every 100 hours of playing and recording time). Clean the surface of the heads gently with a cotton swab moistened with alcohol or by using the headcleaning portion of the demonstration tape supplied with this unit.

CAUTION: **Do not use any solution other than alcohol or commercial tape head cleaner for head cleaning. Never touch the REC/PLAY and ERASE heads with metal objects such as screwdrivers and never bring a magnet close to the tape mechanism to prevent costly damage to the tape recorder.**

To obtain optimum performance from your cassette deck, the following instructions should be remembered.

* **Using cotton swab**

Clean the rubber pressure roller and the capstan shaft with a soft cotton swab slightly moistened with alcohol. Push the Play button and clean the REC/PLAY and ERASE heads in the same manner.

* **Using the demonstration tape supplied with this unit**

(A strip of head cleaning tape of about seven seconds duration is attached to both ends of side 1 and side 2 of the demonstration tape)

1) Insert the cassette, using either side 1 or 2.
2) Push the Play button ㉑. Let the tape run for several seconds, then push the Stop button ⑳.
3) Remove the cassette by pushing the Eject button ⑱. The heads are now clean.

NOTE: When listening to the demonstration tape, stop the tape before it reaches the head cleaning strip. Too frequent use of the head cleaning section should be avoided because of the abrasive properties of the headcleaning tape strip.

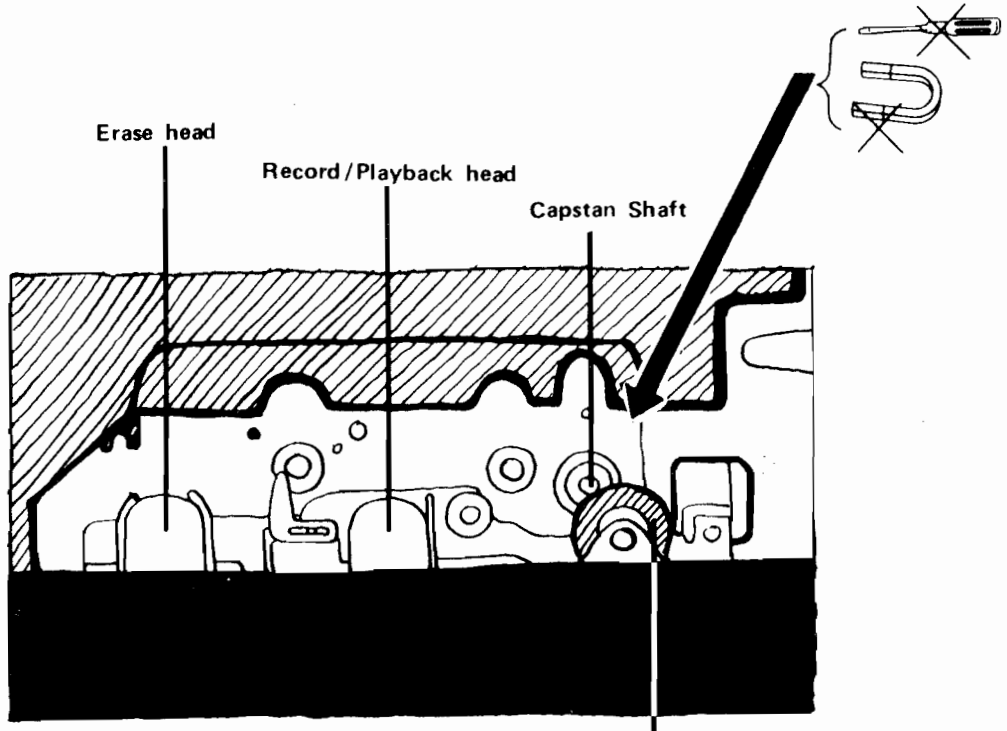


Fig. 24

8-Track Tape Operation

GENERAL INTRODUCTION

Record Button ㊳ (RECORD)

While pushing the Record button, insert the tape cartridge into the Tape slot ㊲. The Recording "ON" indicator lamp ㊵ lights up when the Record button is pushed.

Pause Button ㉚ (PAUSE)

To interrupt the tape movement temporarily during playback or recording, press this button in. To resume playing (or when you are ready to start recording), release this button by pushing it once again.

NOTE: Do not leave the Pause button in "ON" (depressed) position for a long period of time.

End of Track Eject Button ㉛ (AUTO EJECT)

When this button is pushed in during Playback, Recording or Fast Forward, the tape cartridge will eject automatically at the end of each track (program) or at the end of a selected track when pushed in while the program indicator lights the selected program number.

This feature enables you to advance the tape in Fast Forward to the start of the selected track (end of the previous track) and record a single program only, if the "Auto Eject" button is left depressed, thereby preventing accidental erasure of recorded programs on subsequent tracks. (Auto Eject works also in "REPEAT" mode.)

NOTE: To release the Auto Eject button, push the button again for normal operation.

Fast Forward Button ㉝ (FF)

To advance the tape rapidly, press this button. Release this button by depressing it once again to resume normal playback.

NOTE: When this button is accidentally pushed during recording, the Recording warning lamp ㉜ will light up and no recording will be made.

Recording Warning Lamp ㉜ (RELEASE FF)

This indicator will light up to alert you that the Fast Forward button ㉝ is left "depressed" when the Record button ㊳ is pushed in.

Release the FF button by depressing it again. The warning lamp will go out and the recording can be started.

NOTE: When this indicator lights up, Manual Eject button ㉞ will not operate.

Recording "ON" Indicator Lamp ㊵ (REC)

This will light up when the Record button ㊳ is pushed in.

Manual Eject Button ㉞ (EJECT)

To eject the tape cartridge **manually**, simply push this button. The Manual Eject button will not operate when the Pause button ㉚ is pushed in.

NOTE: Do not push the Eject button half-way or hold it down for more than one second.

RELATIONSHIP BETWEEN EACH 8-TRACK OPERATING BUTTONS

This chart is given here for you to understand the consequences if two (or more) buttons are pushed at one time.

	RECORD BUTTON	PROGRAM SELECTOR BUTTON	REPEAT BUTTON	PAUSE BUTTON	AUTO EJECT BUTTON	FAST FORWARD BUTTON	MANUAL EJECT BUTTON
RECORD BUTTON		Program changes	Repeat does not function	Pause operates	Auto Eject operates	Recording inoperative and warning lamp lights up	Manual Eject operates
PROGRAM SELECTOR BUTTON	Program changes		Program changes and Repeat that program	Pause operates and Program Selector is inoperative	Program changes and Auto Eject operates	Program changes and FF operates	Manual Eject operates
REPEAT BUTTON	Repeat does not function	Program changes and Repeat that program		Pause operates	Auto Eject operates	FF works and Repeat operates	Manual Eject operates
PAUSE BUTTON	Pause operates	Pause operates and Program Selector is inoperative	Pause operates		Pause operates	Pause operates	Pause operates and Manual Eject inoperative
AUTO EJECT BUTTON	Auto Eject operates	Program changes and Auto Eject operates	Auto Eject operates	Pause operates		FF operates and Auto Eject operates	Manual Eject operates
FAST FORWARD BUTTON	Recording inoperative and warning lamp lights up	Program changes and FF operates	FF works and Repeat operates	Pause operates	FF operates and Auto Eject operates		Manual Eject operates
MANUAL EJECT BUTTON	Manual Eject operates	Manual Eject operates	Manual Eject operates	Pause operates and Manual Eject inoperative	Manual Eject operates	Manual Eject operates	

Time Counter and Reset Button ㉟

The Time Counter will automatically start to count when playing back or when recording. This counter will help you determine approximately where to re-play or re-record. Therefore, it will be convenient for you to set the Time Counter to "00^{0}" by pushing the Reset button before the start of any playback or recording.

Recording Level Meter ㊴ (RECORDING LEVEL)

The needle movement of the recording level meter ㊴ indicates when your unit is in "recording" mode. This unit's recording level control system adjusts and maintains proper recording level automatically.

Automatic Eject System

When the tape reaches its end (i.e. end of program 4) during **recording** or **fast forward** operation, the cartridge will automatically eject.

NOTE: Remove the cartridge from the Tape slot when not in use.

PLAYBACK

1) Set the Selector switch ❾ to "8-TRACK/MIC".
2) **Inserting a pre-recorded tape cartridge:**
   Hold the cartridge, label side up and with the tape exposed end toward the Tape slot ㊲, making sure the cartridge is not inverted. Then insert it firmly into the Tape slot. (See Fig. 25) The Program indicator ㉙ lights and playback starts. Playback continues in the order 1-2-3-4-1-2-, etc. until manually ejected.
   NOTE: When inserting the tape cartridge for the very first time (after setting up is done), the tape cartridge may "eject" from the Tape slot. This may occur even when the Eject button is not pushed. Please be informed, however, that the set is not at all damaged or defected. Simply re-insert the tape cartridge again and normal operation will start.
3) Adjust the volume, balance, bass, treble and loudness controls as you would for radio operation.

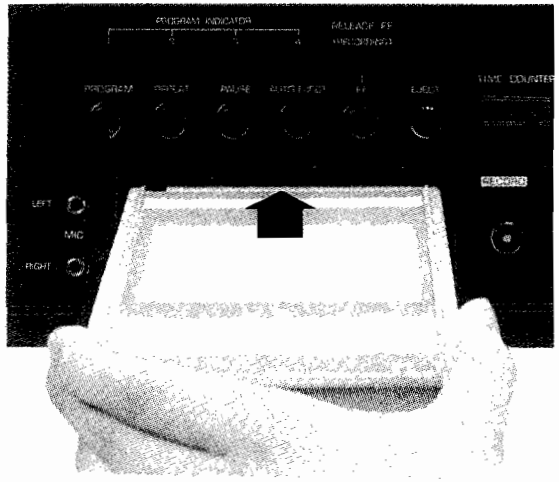


Fig. 25

- **To repeat** a certain program over and over, simply push the Repeat button ㉘.
- **To change** a program, push the Program selector ㉗.
  The Program selector, if pushed, will change a program even when a tape cartridge is NOT inserted.
  NOTE: Do not push the Program selector half-way or hold it down for more than one second.
- **To stop** the tape, push the Manual Eject button ㉞ and remove the cartridge from the Tape slot. (See Fig. 26)

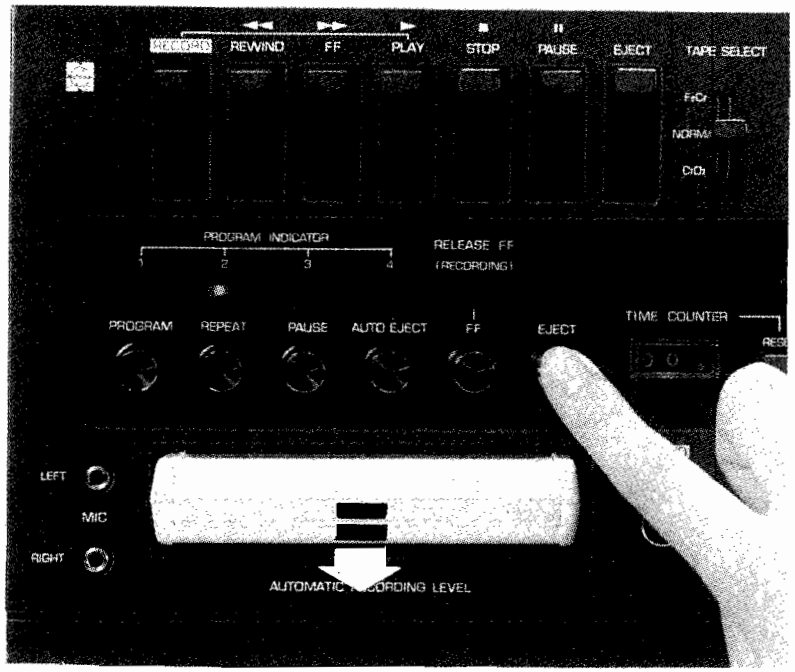


Fig. 26

RECORDING

This unit has provisions for monitoring through its speakers when making recordings. When recording, Volume ❺, Balance ❻, Bass ❼, Treble ❽ and Loudness ❹ control settings do not affect recording level and tonal quality.

Choosing the starting point to record

1) To record (or playback) from start of the first program, simply depress the Program selector ㉗ until the Program indicator ㉙ shows program "4". Then depress the Fast forward button ㉝. The tape will run fast forward and **automatically eject** at the starting point of the first program.
   NOTE: **When fast forward operation is not required, make sure to release the Fast forward button ("out" position) to avoid unnecessary fast forward movement of the tape when it is engaged.**
2) When you want to record only on one selected track (program), push the "Auto Eject" button ㉛. At the end of that particular program, the tape is automatically disengaged. When this Auto Eject button is not pushed, recording will continue until the end of program 4. At the end of program 4 the cartridge will automatically eject.

Preparing for recording

Choose the program you wish to record by following the previous instruction. Press the Pause button ㉚. Then, while pressing the Record button ㉘ insert the tape cartridge into the Tape slot ㉗. (See Fig. 27) The Recording "ON" indicator lamp ㊵ lights up and the needle of the Recording level meter ㉙ moves. As soon as you are ready to start the recording, simply release the Pause button.

NOTE: **Make sure that the Recording warning lamp ㉜ is NOT lit. When it is lit, it indicates that the FF button ㉝ is "depressed". It must be RELEASED before recording can start.**

Recording from built-in Radio, Phono or Cassette tape player

* **Be sure no microphone is connected to the Microphone jack ㊱.**
Then proceed as follows;

1) Operate as for Radio, Phono or Cassette Tape Operation and choose the program you wish to record.
2) **Depress the Pause button ㉚.**
3) While pressing the Record button ㉘ insert the tape cartridge into the Tape slot ㉗. (Fig. 27)
   Prepare for recording as previously explained.
4) To start recording, **release the Pause button ㉚.**

- To stop recording, depress the Manual Eject button ㉞ The Record button ㉘ will return to its original position. And the Recording "ON" indicator lamp ㊵ will go out.

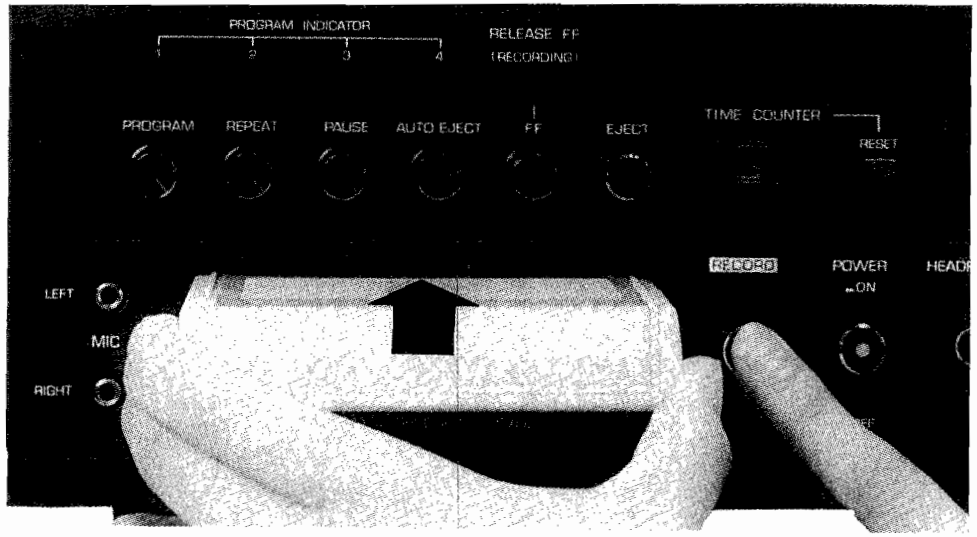


Fig. 27

Recording from the Microphone(s)

1) Connect the microphone(s) to the Microphone jack(s) ㊱.
2) Turn the Selector switch ❾ to "8-Track/MIC" position.
3) Follow items 2, 3 and 4 of the "Recording from built-in Radio, Phono or Cassette".

CAUTION: **When NOT recording from the microphone(s), disconnect the microphone(s) from the Microphone jack(s).**

ERASING

Any previously recorded material on a tape is automatically erased when the tape is again used for recording and only the newly recorded sound will remain. To erase the tape without adding a new recording, proceed as follows.

1) Disconnect (unplug) the microphone(s) from the Microphone jack(s) ㊱.
2) Set the Selector switch ❾ to "8-Track/MIC".
3) While pressing the Record button ㊳ insert the recorded tape cartridge into the Tape slot ㊲.
4) Let the tape run as if recording. All previous recordings will be erased.

NOTE: If microphone(s) are not unplugged, unwanted room and outside noises will be recorded during erasing.

CAUTION: **To prevent accidental erasure of your pre-recorded tapes make sure, before pushing the Record button that the tape you want to record on does not contain recorded program material which you would like to save for future use.**

HEAD CLEANING (Fig. 28)

The record/playback/erase head, sensing poles and capstan shaft in the tape slot may accumulate dust and tape residue, causing poor and wavering sound or incomplete erasure of a previous recording. This residue should be cleaned periodically (about every 100 hours of playing and recording time). Clean the surface of the head, sensing pole and capstan gently with the head cleaning bar (enclosed with this instruction book), or use a cotton swab moistened with alcohol, or by loading a special head cleaning tape cartridge into the tape mechanism.

CAUTION: **Never bring a magnet and/or metal objects such as screwdrivers close to the recording/playback/erase head or to any portion of the tape mechanism to prevent costly damage to the tape recorder.**

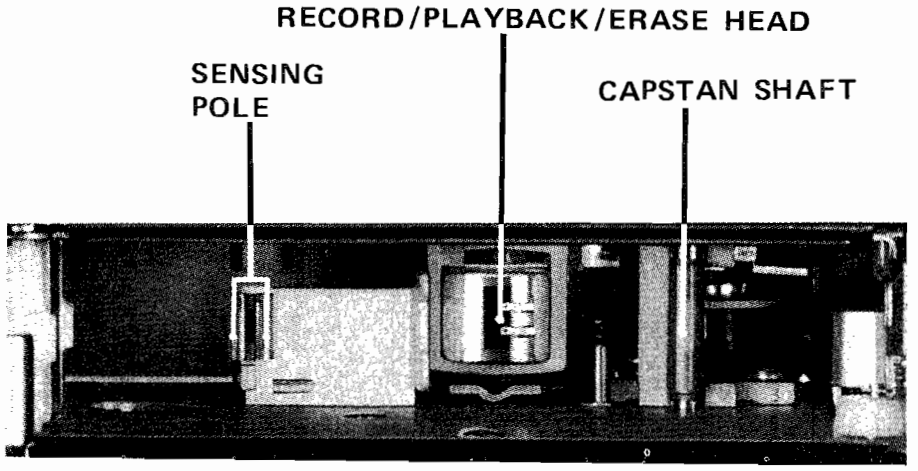


Fig. 28

4-Channel Matrix Listening

Mode selector switch ❸

4CH MTX. (▬): Reproduces "4-channel matrix" stereo sounds from conventional stereo programs (i.e. stereo records, stereo tapes, or FM stereo broadcasts) through 4 speakers.

STEREO (▮): Reproduces conventional stereo sounds from the two supplied "front" speakers. This position enables you to cut off the 4-channel matrix circuit. Thus, sounds from the rear speakers are cut off.

IMPORTANT: Always make sure to **set** this switch to "STEREO" (▮) and only when you reproduce 4-channel matrix sound, set it to "4CH MTX" (▬).

To reproduce 4-channel matrix sound

1) Connect optional rear speaker systems (8~16Ω) to the left and right rear speaker jacks ㊺.
2) Set Mode selector switch ❸ to "4CH MTX" (▬) position.
3) Use the front speaker systems of this unit as front-position speakers and the additional rear speaker systems as rear-position speakers. The optimum listening position is in the center of the 4 speaker systems. (Fig. 29)

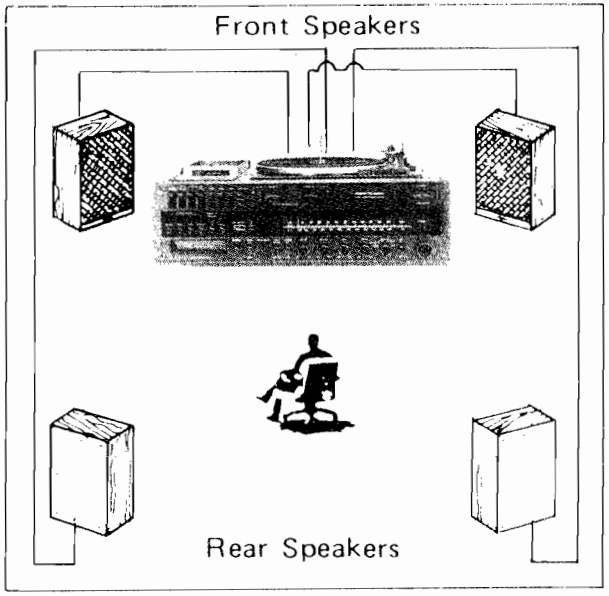


Fig. 29

Location of Serial Number

You will find the SERIAL NUMBER on the rear panel of this unit.

Supplied Accessories

Microphone with stand	2
Demonstration tape with head cleaning section for Cassette	1
Head Cleaning Bar for 8-Track	1
45 r.p.m. manual adaptor	1
Manual Spindle	1
Automatic Spindle	1
Capstan (50Hz or 60Hz)	1
Dust Cover	1

Specifications

AMPLIFIER SECTION

Frequency Response:	25Hz～30kHz
Tone Controls:	Bass; ±10dB at 100Hz
	Treble; ±10dB at 10kHz
Loudness Control:	+8dB at 100Hz
	+3dB at 10kHz
REC OUT:	200mV

FM TUNER SECTION

Frequency Range:	87.5MHz～108MHz
Intermediate Frequency:	10.7MHz
Usable Sensitivity:	4μV (S/N 30dB, MOD 30%)
Harmonic Distortion:	0.5% (at 1kHz 60dB 30%)
Signal to Noise Ratio:	65dB (at 1kHz 60dB 100%)
Stereo Separation:	35dB (at 1kHz 60dB 30%)
Antenna:	300 ohms, Balanced
	Built-in Line Antenna

AM TUNER SECTION

Frequency Range:	525kHz～1605kHz
Intermediate Frequency:	455kHz
Usable Sensitivity:	100μV/m for 50mW
Antenna:	Built-in Ferrite Bar Antenna

RECORD PLAYER SECTION

Type:	Automatic Record Changer
Turntable:	11" (28cm)
Turntable Speeds:	33-1/3, 45 and 78 rpm, 3 speeds
Phono Motor:	4-pole Induction Motor
Cartridge:	Moving-Magnet type, EPC-82SMBD
Stylus:	Diamond, EPS-31STSD
Stylus Pressure:	4～5g

CASSETTE TAPE DECK SECTION

Deck System:	Auto-Stop Cassette
Track System:	4-Track, 2-Channel
Recording System:	AC Bias (52kHz)
Erasing System:	AC Erase (52kHz)
Tape Speed:	1-7/8 i.p.s. (4.8cm/sec)
Frequency Response:	70Hz～12kHz (FeCr)
	70Hz～10kHz (Normal)
Operation System:	70Hz～12kHz (CrO_2)
Wow & Flutter:	Automatic Level Control Recording
	0.2% WRMS

8-TRACK TAPE DECK SECTION

Track System:	8-Track, 2-Channel
Recording System:	AC Bias (47kHz)
Erasing System:	AC Erase (47kHz)
Tape Speed:	3-3/4 i.p.s., 9.5cm/sec
Frequency Response:	40Hz～12kHz
Operation System:	Automatic Level Control Recording
Wow & Flutter:	0.2% WRMS

SPEAKER SYSTEM

Type:	2-way Air-Suspension
Woofer:	20cm (8") High-Compliance Cone type
Tweeter:	5cm (2") Cone type
Impedance:	8 ohms

POWER CONSUMPTION: 100W

POWER SUPPLY: AC 100～115V, 115～130V, 200～225V, 225～250V 50/60Hz

DIMENSIONS: (W x H x D)

Center Unit:	21-25/32" x 11-9/32" x 16-11/16"
	(553mm) (286.5mm) (424mm)
Speaker System:	11-13/32" x 19-7/16" x 8-17/32"
	(290mm) (494mm) (217mm)

WEIGHT

Center Unit:	39lb. 11oz (18kg)
Speaker System:	12lb. 2oz (5.5kg) x 2

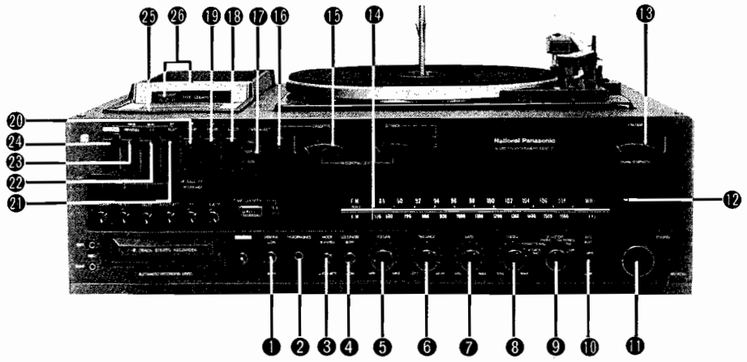


Fig. 1

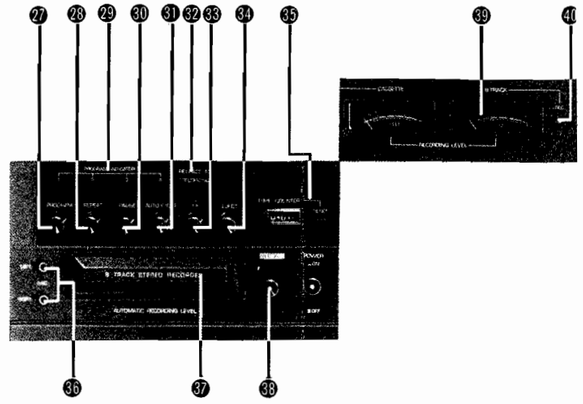


Fig. 2

Dear Music Lover

Your new National Panasonic Compact Stereo Phonograph with built-in Radio, Cassette and 8-Track Tape Recorder was manufactured and assembled under exacting quality control standards. The incorporation of the latest advances in design and the use of the most modern components ensure outstanding performance with superb sensitivity and tone quality. Just a few minutes of your time spent reading carefully through this instruction book will assure optimum performance that will bring you continued enjoyment for many years.

Special Features

RADIO

* Smartly designed floating Tuning Dial Pointer and illuminated "FM STEREO" indicator that makes pinpointing much easier and faster.
* Equipped with "Automatic Frequency Control" (AFC) on FM and FM STEREO to give you drift-free FM reception.
* Equipped with FET (Field Effect Transistor) tuner for highest sensitivity.

PHONO

* Full size automatic record changer with Cueing Lever and Stylus Pressure Adjustment.
* It will play a stack of one to six records in automatic sequences and shut off the record changer unit after playing the last record.
* Equipped with Magnetic Type Phono Cartridge.

CASSETTE TAPE RECORDER

* Auto-Stop Cassette System.
* Convenient "Pause" control for short intermission during play and recording mode.
* The "Automatic Recording Level Control" gives you finest recording and saves adjusting knobs.
* Equipped with a "Tape Selector" switch which enables you to change the frequency characteristics for any of "FeCr", "NORMAL" or "CrO_2" cassette tapes.

8-TRACK TAPE RECORDER

* Equipped with push-button program selector, lighted program indicators, convenient fast forward button, repeat button etc.
* Convenient "Pause" control for short intermission during play and recording mode.
* The Recording Warning Lamp tells you that the Fast Forward button is left depressed once the Recording button is pushed in.
* The built-in "Auto-Eject" automatically disengages the cartridge at the end of the tape in the record mode or fast forward operation.
* The "Automatic Recording Level Control" gives you finest recording and saves adjusting knobs.

OTHERS

* 4-Channel "matrix" system gives you 4-channel sound presence from 2-channel sources. Just add two rear speakers (optional).
* Convenient Loudness Control.
* Separate Bass and Treble controls.

When Using	
RADIO	• Background during FM during FM
	• Noise is he pass nearby
	• Noise is h "FM Stereo casts" recep
PHONO	• Abnormal N (distortion scratchiness,
8-TRACK TAPE RECORDER	• No Sound (mechanical
	• Poor or Wea or incomple
CASSETTE TAPE RECORDER	• No Sound (mechanical
	• Poor or Wea or incompl

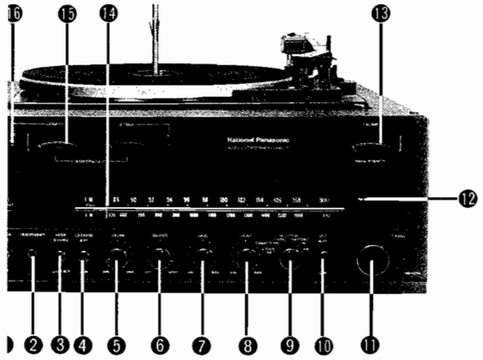


Fig. 1

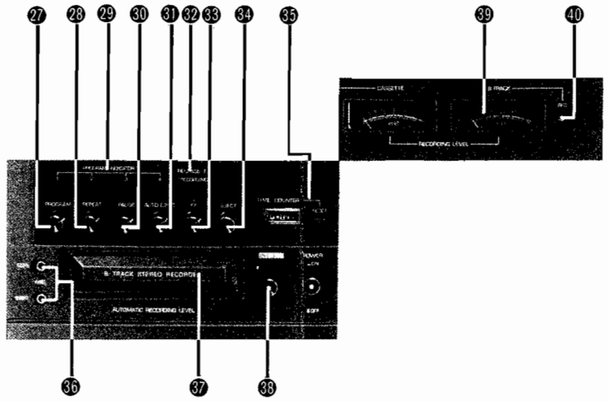


Fig. 2

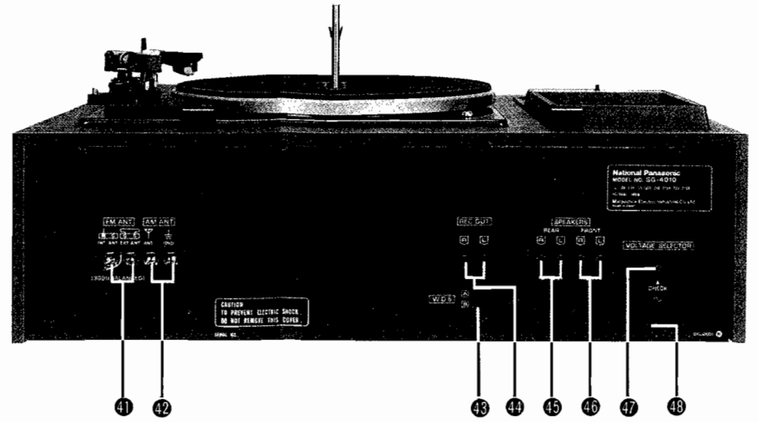


Fig. 3

over

al Panasonic Compact Stereo Phonograph with built-in and 8-Track Tape Recorder was manufactured and as- acting quality control standards. The incorporation of the design and the use of the most modern components g performance with superb sensitivity and tone quality. tes of your time spent reading carefully through this will assure optimum performance that will bring you ent for many years.

Special Features

Dial Pointer and illuminated
ikes pinpointing much easier

iency Control" (AFC) on FM
rift-free FM reception.
Transistor) tuner for highest

iger with Cueing Lever and

six records in automatic se-
changer unit after playing the

hono Cartridge.

R

r short intermission during

el Control" gives you finest
obs.

* Equipped with a "Tape Selector" switch which enables you to change the frequency characteristics for any of "FeCr". "NORMAL" or "CrO_2" cassette tapes.

8-TRACK TAPE RECORDER

* Equipped with push-button program selector, lighted program indicators, convenient fast forward button, repeat button etc.
* Convenient "Pause" control for short intermission during play and recording mode.
* The Recording Warning Lamp tells you that the Fast Forward button is left depressed once the Recording button is pushed in.
* The built-in "Auto-Eject" automatically disengages the cartridge at the end of the tape in the record mode or fast forward operation.
* The "Automatic Recording Level Control" gives you finest recording and saves adjusting knobs.

OTHERS

* 4-Channel "matrix" system gives you 4-channel sound presence from 2-channel sources. Just add two rear speakers (optional).
* Convenient Loudness Control.
* Separate Bass and Treble controls.

Some Helpful Hints Chart

When Using	Symptom	Probable Cause	Possible Remedy
RADIO	• Background noise (hiss) is higher during FM STEREO broadcast than during FM MONO reception.	• It is normal for FM Stereo to have higher noise level than FM Mono broadcast.	• Turn Bass and Treble controls to "Low" (minimum) position. • Connect an external FM Antenna to the FM ANT terminal on the rear panel for better reception.
	• Noise is heard when motor vehicles pass nearby.	• Ignition noise from the engine of the motorvehicle.	• Change direction of FM external antenna away from the street.
	• Noise is heard continually during "FM Stereo & FM monaural broadcasts" reception.	• Antenna placement is incorrect.	• Select the best location of the FM external antenna by trying different directions and placement until optimum reception is achieved.
PHONO	• Abnormal Noise (distortion or unusual vibration, scratchiness, etc.)	• Dust on the disc or on the tip of the stylus.	• Any dust on the surface of the disc and on the tip of the stylus interferes with satisfactory reproduction. Be sure therefore, to clean away dust completely, using a cleaner or other effective method.
		• The stylus is bent, or out of position.	• If positional adjustment or stylus cleaning fails to correct sound output, stylus may be chipped and requires replacement. Refer to "Stylus Replacement".
		• The stylus is worn out.	• The stylus can be used for up to 1,000 hours depending on condition and care of records and equipment. If used longer noise will increase and the disc may be damaged. Replace stylus with a new one. Refer to "Stylus Replacement".
		• The disc is worn out.	• Do not use a worn out disc.
8-TRACK TAPE RECORDER	• No Sound (mechanical defects)	• 8-track tape cartridge is worn out, or is caught on the head or the sensing poles. • The tape cartridge is inserted incorrectly.	• Replace or remove the tape cartridge from the tape slot.
		• Fast forward button is left in the "depressed" ON position.	• Be sure the Fast forward button is not "depressed". It must be in "OFF" position.
		• Pause button is left "depressed" (Tape does not move).	• Release the Pause button to "out" position.
	• Poor or Weak recording or playback, or incomplete erasure.	• Dirty Rec/Play/Erase head.	• Clean head of tape mechanism according to "Head Cleaning" instructions in this booklet.
CASSETTE TAPE RECORDER	• No Sound (mechanical defects)	• Cassette tape is worn out, or is caught on the head or the capstan shaft.	• Replace or remove the cassette tape from the cassette holder.
		• Pause button is left in the "locked" position. (Tape does not move)	• Pause button should be "released".
	• Poor or Weak recording or playback, or incomplete erasure.	• Dirty REC/PLAY and ERASE heads.	• Clean heads of tape mechanism according to "Head Cleaning" instructions in this booklet.
COMMON	• No Sound (from speakers)	• AC cord loose or disconnected. • Speaker cords are disconnected.	• Make sure AC cord and speaker cords are securely connected.
		• Selector switch is not corretly set.	• Set the Selector switch to the correct function to which you want to listen.
		• Headphones left in the Headphone jack.	• Unplug the headphones.
		• Volume control is set to "MIN" position.	• Turn Volume control toward "MAX" position.